



## SEQUENCE LISTING

&lt;110&gt; Korenberg, Julie R.

<120> NUCLEIC ACID ENCODING DS-CAM PROTEINS AND PRODUCTS  
RELATED THERETO

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&lt;221&gt; CDS

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agggtgaggg ctggcgacgg ggaggccgct ggctgcgcatt tctggcgcc gagtgcccg 120

gatgagctca cgcccgcgtc tgcggctctc tccacctgcc gacctgccgg gggcccactg 180

agctgacggc gcacctgggc tccggccgca gcgtggggcg cggcgcccg gaggcagggtgt 240

gcaggagcgc agcgcgccggc gagcgcagcc ctcgctccgg agcccgccgg cgccgcgtgc 300

ccggggcgct aggcagcggc ggcggcgccg gcggggcgccg ggcggggcgcc ggccccccgg 360

caggtgccga gcggcgagcg gagccgggccc gggcgagcg cggggggcgaa ggccggcg 420

tcgctcgccgg gaggccgggg agcggcaggg gc atg tgg ata ctg gct ctc tcc 473  
Met Trp Ile Leu Ala Leu Ser

1

5

ttg ttc cag agc ttc gcg aat gtt ttc agt gaa gac cta cac tcc agc 521  
64

Leu	Phe	Gln	Ser	Phe	Ala	Asn	Val	Phe	Ser	Glu	Asp	Leu	His	Ser	Ser	
10																
														20		
ctc	tac	ttt	gtc	aat	gca	tct	ctg	caa	gag	gta	gtg	ttt	gcc	agc	acc	569
Leu	Tyr	Val	Asn	Ala	Ser	Leu	Gln	Glu	Val	Val	Phe	Ala	Ser	Thr		
25															35	
acg	ggg	act	ctg	gtg	ccc	tgc	ccc	gca	gca	ggc	atc	cct	cct	gtg	act	617
Thr	Gly	Thr	Leu	Val	Pro	Cys	Pro	Ala	Ala	Gly	Ile	Pro	Pro	Val	Thr	
40															55	
ctc	aga	tgg	tac	cta	gcc	acg	ggc	gag	gag	atc	tac	gat	gtc	ccc	ggg	665
Leu	Arg	Trp	Tyr	Leu	Ala	Thr	Gly	Glu	Glu	Ile	Tyr	Asp	Val	Pro	Gly	
60															70	
atc	cgc	cac	gtc	cac	ccc	aac	ggc	act	ctc	caa	att	ttc	ccc	ttc	cct	713
Ile	Arg	His	Val	His	Pro	Asn	Gly	Thr	Leu	Gln	Ile	Phe	Pro	Phe	Pro	
75															85	
cct	tca	agc	ttc	agt	acc	tta	atc	cat	gat	aat	act	tat	tat	tgc	aca	761
Pro	Ser	Ser	Phe	Ser	Thr	Leu	Ile	His	Asp	Asn	Thr	Tyr	Tyr	Cys	Thr	
90															100	
gct	gaa	aat	cct	tca	ggg	aaa	att	aga	agt	cag	gat	gtc	cac	atc	aag	809
Ala	Glu	Asn	Pro	Ser	Gly	Lys	Ile	Arg	Ser	Gln	Asp	Val	His	Ile	Lys	
105															115	
gct	gtt	tta	cg	gag	ccc	tat	aca	gtc	cgt	gtg	gag	gac	cag	aaa	acc	857
Ala	Val	Leu	Arg	Glu	Pro	Tyr	Thr	Val	Arg	Val	Glu	Asp	Gln	Lys	Thr	
120															135	
atg	aga	ggc	aat	gtt	g	g	tc	t	tc	a	g	t	c	c	tcg	905
Met	Arg	Gly	Asn	Val	Ala	Val	Phe	Lys	Cys	Ile	Ile	Pro	Ser	Ser	Val	
140															150	
gag	g	g	c	t	a	c	at	g	t	g	aaa	g	a	c	act	953
Glu	Ala	Tyr	Ile	Thr	Val	Val	Ser	Trp	Glu	Lys	Asp	Thr	Val	Ser	Leu	
155															165	
gtc	tca	gga	tct	aga	ttt	ctc	atc	aca	tcc	acg	gga	gcc	ttg	tat	att	1001
Val	Ser	Gly	Ser	Arg	Phe	Leu	Ile	Thr	Ser	Thr	Gly	Ala	Leu	Tyr	Ile	
170															175	
aaa	gat	gta	cag	aat	gaa	gat	gga	ttg	tat	aac	tac	cgc	tgc	atc	acg	1049
Lys	Asp	Val	Gln	Asn	Glu	Asp	Gly	Leu	Tyr	Asn	Tyr	Arg	Cys	Ile	Thr	
185															190	
cg	cat	cga	tac	acc	gga	gag	acg	agg	cag	acg	aac	acg	gcc	aga	ctt	1097

Arg His Arg Tyr Thr Gly Glu Thr Arg Gln Ser Asn Ser Ala Arg Leu			
200	205	210	215
ttt gta tca gac cca gcg aac tca gcc cca tcc ata ctg gat ggg ttt 1145			
Phe Val Ser Asp Pro Ala Asn Ser Ala Pro Ser Ile Leu Asp Gly Phe			
220	225	230	
gac cat cgc aaa gcc atg gct ggg cag cgt gtg gag ctg cct tgc aaa 1193			
Asp His Arg Lys Ala Met Ala Gly Gln Arg Val Glu Leu Pro Cys Lys			
235	240	245	
gcg ctc ggg cac cct gag cca gat tac cgc tgg ctg aag gac aac atg 1241			
Ala Leu Gly His Pro Glu Pro Asp Tyr Arg Trp Leu Lys Asp Asn Met			
250	255	260	
ccc ctg gaa ctt tca ggg agg ttc cag aag acc gtg acg ggg ctg ctc 1289			
Pro Leu Glu Leu Ser Gly Arg Phe Gln Lys Thr Val Thr Gly Leu Leu			
265	270	275	
att gag aac att cgc ccc tcg gac tca ggc agc tat gtt tgt gaa gtg 1337			
Ile Glu Asn Ile Arg Pro Ser Asp Ser Gly Ser Tyr Val Cys Glu Val			
280	285	290	295
tcc aac aga tac gga act gct aag gtg ata ggc cgc ctg tac gtg aaa 1385			
Ser Asn Arg Tyr Gly Thr Ala Lys Val Ile Gly Arg Leu Tyr Val Lys			
300	305	310	
cag cca ctg aaa gcc acc atc agt ccc agg aag gtt aaa agc agc gtg 1433			
Gln Pro Leu Lys Ala Thr Ile Ser Pro Arg Lys Val Lys Ser Ser Val			
315	320	325	
ggc agc caa gtt tcc ttg tcc tgc agc gtg aca gga act gag gac cag 1481			
Gly Ser Gln Val Ser Leu Ser Cys Ser Val Thr Gly Thr Glu Asp Gln			
330	335	340	
gaa ctc tcc tgg tac cgc aat ggt gaa atc ctc aac cct gga aaa aat 1529			
Glu Leu Ser Trp Tyr Arg Asn Gly Glu Ile Leu Asn Pro Gly Lys Asn			
345	350	355	
gtg agg atc aca ggg atc aac cac gaa aac ctt ata atg gat cac atg 1577			
Val Arg Ile Thr Gly Ile Asn His Glu Asn Leu Ile Met Asp His Met			
360	365	370	375
gtc aaa agt gac ggg ggc gca tac cag tgc ttt gtg cgc aag gac aag 1625			
Val Lys Ser Asp Gly Gly Ala Tyr Gln Cys Phe Val Arg Lys Asp Lys			
380	385	390	
ctg tcc gct caa gac tat gtg cag gtg gtc ctt gaa gat gga act ccc 1673			
ctg tcc gct caa gac tat gtg cag gtg gtc ctt gaa gat gga act ccc			

Leu Ser Ala Gln Asp Tyr Val Gln Val Val Leu Glu Asp Gly Thr Pro			
395	400	405	
aaa att att tct gcc ttt agt gaa aag gtg gtg agt cca gca gag ccg			1721
Lys Ile Ile Ser Ala Phe Ser Glu Lys Val Val Ser Pro Ala Glu Pro			
410	415	420	
gtt tcc ctt atg tgc aac gtg aag gga aca cct ttg ccc acg atc acg			1769
Val Ser Leu Met Cys Asn Val Lys Gly Thr Pro Leu Pro Thr Ile Thr			
425	430	435	
tgg acc ctg gac gat gac ccg att ctc aag ggt ggc agt cac cgc atc			1817
Trp Thr Leu Asp Asp Asp Pro Ile Leu Lys Gly Gly Ser His Arg Ile			
440	445	450	455
agc cag atg atc acg tcg gag ggg aac gtg gtc agc tac ctg aac atc			1865
Ser Gln Met Ile Thr Ser Glu Gly Asn Val Val Ser Tyr Leu Asn Ile			
460	465	470	
tcc agc tcc cag gtc cgg gac ggg gga gtc tac cgc tgc act gcc aac			1913
Ser Ser Ser Gln Val Arg Asp Gly Gly Val Tyr Arg Cys Thr Ala Asn			
475	480	485	
aac tcg gcg gga gtc gtc ctg tac cag gct cga ata aac gta aga ggg			1961
Asn Ser Ala Gly Val Val Leu Tyr Gln Ala Arg Ile Asn Val Arg Gly			
490	495	500	
cct gca agc att cga cca atg aaa aac atc aca gca ata gca gga cgg			2009
Pro Ala Ser Ile Arg Pro Met Lys Asn Ile Thr Ala Ile Ala Gly Arg			
505	510	515	
gac aca tac att cac tgt cgt gtg att ggc tat ccg tat tac tcc att			2057
Asp Thr Tyr Ile His Cys Arg Val Ile Gly Tyr Pro Tyr Tyr Ser Ile			
520	525	530	535
aaa tgg tac aag aac tct aac ctg ctt cct ttc aac cac cgc caa gtg			2105
Lys Trp Tyr Lys Asn Ser Asn Leu Leu Pro Phe Asn His Arg Gln Val			
540	545	550	
gca ttt gag aac aat gga act ctt aaa ctt tca gat gtg caa aag gaa			2153
Ala Phe Glu Asn Asn Gly Thr Leu Lys Leu Ser Asp Val Gln Lys Glu			
555	560	565	
gtg gac gag ggg gag tac acg tgc aac gtg ttg gtt caa cca caa ctc			2201
Val Asp Glu Gly Glu Tyr Thr Cys Asn Val Leu Val Gln Pro Gln Leu			
570	575	580	
tcc acc agc cag agc gtc cac gtg acc gtg aaa gtt ccg cct ttc ata			2249

Ser	Thr	Ser	Gln	Ser	Val	His	Val	Thr	Val	Lys	Val	Pro	Pro	Phe	Ile		
585					590					595							
caa	ccc	ttt	gag	ttt	cca	aga	ttc	tcc	att	ggg	cag	cgg	gtc	ttc	atc	2297	
Gln	Pro	Phe	Glu	Phe	Pro	Arg	Phe	Ser	Ile	Gly	Gln	Arg	Val	Phe	Ile		
600					605				610			615					
ccc	tgt	gtg	gtc	tca	ggg	gac	tta	ccc	atc	acg	atc	acc	tgg	cag		2345	
Pro	Cys	Val	Val	Val	Ser	Gly	Asp	Leu	Pro	Ile	Thr	Ile	Thr	Trp	Gln		
620							625			630							
aag	gat	ggc	cgg	cca	atc	cct	ggg	agc	ctt	ggg	gtg	acc	att	gac	aat	2393	
Lys	Asp	Gly	Arg	Pro	Ile	Pro	Gly	Ser	Leu	Gly	Val	Thr	Ile	Asp	Asn		
635							640				645						
att	gac	ttc	acg	agc	tcc	ttg	agg	att	tcc	aat	ctc	tcg	ctc	atg	cac	2441	
Ile	Asp	Phe	Thr	Ser	Ser	Leu	Arg	Ile	Ser	Asn	Leu	Ser	Leu	Met	His		
650							655			660							
aat	ggg	aat	tac	acc	tgc	ata	gcc	cgg	aat	gag	gcc	gcc	gct	gtg	gag	2489	
Asn	Gly	Asn	Tyr	Thr	Cys	Ile	Ala	Arg	Asn	Glu	Ala	Ala	Ala	Val	Glu		
665							670			675							
cac	caa	agc	cag	ttg	att	gtc	aga	gtt	cct	ccc	aag	ttt	gtg	gtt	cag	2537	
His	Gln	Ser	Gln	Leu	Ile	Val	Arg	Val	Pro	Pro	Lys	Phe	Val	Val	Gln		
680							685			690			695				
cca	cgg	gac	cag	ggg	att	tat	ggc	aaa	gca	gtc	atc	ctc	aat	tgt		2585	
Pro	Arg	Asp	Gln	Asp	Gly	Ile	Tyr	Gly	Lys	Ala	Val	Ile	Leu	Asn	Cys		
700							705			710							
tct	gtc	gag	ggt	tac	cct	acc	atc	gtg	tgg	aaa	ttc	tct	aaa			2633	
Ser	Ala	Glu	Gly	Tyr	Pro	Val	Pro	Thr	Ile	Val	Trp	Lys	Phe	Ser	Lys		
715							720			725							
ggc	gtc	ggg	gtt	ccc	cag	ttc	cag	cca	att	gcc	cta	aat	ggc	cga	atc	2681	
Gly	Ala	Gly	Val	Pro	Gln	Phe	Gln	Pro	Ile	Ala	Leu	Asn	Gly	Arg	Ile		
730							735			740							
caa	gtt	ctc	agc	aat	ggg	tcg	ttg	ctg	atc	aag	cat	gtc	gtg	gaa		2729	
Gln	Val	Leu	Ser	Asn	Gly	Ser	Leu	Leu	Ile	Lys	His	Val	Val	Glu	Glu		
745							750			755							
gac	agt	ggc	tac	tac	ctc	tgc	aag	gtc	agc	aac	gat	gtg	ggc	gca	gac	2777	
Asp	Ser	Gly	Tyr	Tyr	Leu	Cys	Lys	Val	Ser	Asn	Asp	Val	Gly	Ala	Asp		
760							765			770			775				
gtc	agc	aag	tcc	atg	tac	ctc	acg	gtt	aaa	att	cct	gct	atg	ata	aca	2825	

Val Ser Lys Ser Met Tyr Leu Thr Val Lys Ile Pro Ala Met Ile Thr			
780	785	790	
tcc tat cca aat act acc ctg gcc acg cag ggg cag aaa aag gag atg			2873
Ser Tyr Pro Asn Thr Thr Leu Ala Thr Gln Gly Gln Lys Lys Glu Met			
795	800	805	
agc tgc acg gcg cat ggt gag aag ccc att ata gtc cgc tgg gag aag			2921
Ser Cys Thr Ala His Gly Glu Lys Pro Ile Ile Val Arg Trp Glu Lys			
810	815	820	
gag gac cga atc att aac cct gag atg gcc cgt tat ctt gtg tcc acc			2969
Glu Asp Arg Ile Ile Asn Pro Glu Met Ala Arg Tyr Leu Val Ser Thr			
825	830	835	
aag gag gtg gga gaa gag gtg att tct act ctg cag att ttg cca act			3017
Lys Glu Val Gly Glu Val Ile Ser Thr Leu Gln Ile Leu Pro Thr			
840	845	850	855
gtg aga gaa gat tct ggt ttc ttt tcc tgc cat gct att aat tct tat			3065
Val Arg Glu Asp Ser Gly Phe Phe Ser Cys His Ala Ile Asn Ser Tyr			
860	865	870	
ggg gag gac cgt gga ata att cag ctc aca gtg caa gag ccc cca gac			3113
Gly Glu Asp Arg Gly Ile Ile Gln Leu Thr Val Gln Glu Pro Pro Asp			
875	880	885	
cct ccc gaa att gag atc aaa gat gtc aaa gca cgc aca att acg ctc			3161
Pro Pro Glu Ile Glu Ile Lys Asp Val Lys Ala Arg Thr Ile Thr Leu			
890	895	900	
agg tgg acc atg ggg ttt gat gga aac agt ccc atc aca ggc tac gat			3209
Arg Trp Thr Met Gly Phe Asp Gly Asn Ser Pro Ile Thr Gly Tyr Asp			
905	910	915	
att gaa tgc aaa aat aaa tca gac tcc tgg gat tct gct cag aga acc			3257
Ile Glu Cys Lys Asn Lys Ser Asp Ser Trp Asp Ser Ala Gln Arg Thr			
920	925	930	935
aaa gat gtt tcc cct cag ctg aac tcg gcc acc atc att gat atc cac			3305
Lys Asp Val Ser Pro Gln Leu Asn Ser Ala Thr Ile Ile Asp Ile His			
940	945	950	
cct tcc tcc acc tac agc atc cgc atg tac gcc aag aac cgg att ggc			3353
Pro Ser Ser Thr Tyr Ser Ile Arg Met Tyr Ala Lys Asn Arg Ile Gly			
955	960	965	
aag agc gag ccc agc aac gag ctc acc atc acg gcg gac gag gca gct			3401

Lys Ser Glu Pro Ser Asn Glu Leu Thr Ile Thr Ala Asp Glu Ala Ala			
970	975	980	
cct gat ggt cca cct cag gaa gtt cac ctg gag cct ata tca tct cag			3449
Pro Asp Gly Pro Pro Gln Glu Val His Leu Glu Pro Ile Ser Ser Gln			
985	990	995	
agc atc agg gtc aca tgg aag gct ccc aag aaa cat ttg caa aat ggg			3497
Ser Ile Arg Val Thr Trp Lys Ala Pro Lys Lys His Leu Gln Asn Gly			
1000	1005	1010	1015
att atc cgt ggc tac caa ata ggt tac cga gag tac agc act ggg ggt			3545
Ile Ile Arg Gly Tyr Gln Ile Gly Tyr Arg Glu Tyr Ser Thr Gly Gly			
1020	1025	1030	
aac ttc caa ttc aac att atc agt gtc gac acc agc ggg gac agt gag			3593
Asn Phe Gln Phe Asn Ile Ile Ser Val Asp Thr Ser Gly Asp Ser Glu			
1035	1040	1045	
gtt tac acc ctg gac aac ctg aat aag ttc act cag tac ggc ctg gtc			3641
Val Tyr Thr Leu Asp Asn Leu Asn Lys Phe Thr Gln Tyr Gly Leu Val			
1050	1055	1060	
gtg cag gcc tgt aac cgg gcc ggc acg ggg cct tct cag gaa atc			3689
Val Gln Ala Cys Asn Arg Ala Gly Thr Gly Pro Ser Ser Gln Glu Ile			
1065	1070	1075	
atc acc acc act ctc gag gat gtg ccc agt tac ccc ccc gaa aat gtc			3737
Ile Thr Thr Leu Glu Asp Val Pro Ser Tyr Pro Pro Glu Asn Val			
1080	1085	1090	1095
caa gcc ata gca aca tca cca gaa agc ata tca ata tcc tgg tcc aca			3785
Gln Ala Ile Ala Thr Ser Pro Glu Ser Ile Ser Trp Ser Thr			
1100	1105	1110	
ctt tcc aag gaa gcc ttg aat gga att ctc cag ggg ttc aga gtc att			3833
Leu Ser Lys Glu Ala Leu Asn Gly Ile Leu Gln Gly Phe Arg Val Ile			
1115	1120	1125	
tac tgg gcc aac ctc atg gac gga gag ctg ggt gag att aaa aac atc			3881
Tyr Trp Ala Asn Leu Met Asp Gly Glu Leu Gly Glu Ile Lys Asn Ile			
1130	1135	1140	
acc acc aca cag cct tca ctg gag ctg gac ggg ctg gaa aag tac acc			3929
Thr Thr Thr Gln Pro Ser Leu Glu Leu Asp Gly Leu Glu Lys Tyr Thr			
1145	1150	1155	
aac tac agc atc cag gtg ctg gcc ttc acc cgc gca gga gac ggg gtc			3977

Asn Tyr Ser Ile Gln Val Leu Ala Phe Thr Arg Ala Gly Asp Gly Val			
1160	1165	1170	1175
agg agt gag cag atc ttc acc cgg acc aaa gag gat gtt cca ggt cct			4025
Arg Ser Glu Gln Ile Phe Thr Arg Thr Lys Glu Asp Val Pro Gly Pro			
1180		1185	1190
ccc gcg ggt gtg aag gca gcg gcg gcc tca gcc tcc atg gtc ttt gtg			4073
Pro Ala Gly Val Lys Ala Ala Ala Ser Ala Ser Met Val Phe Val			
1195		1200	1205
tcc tgg ctt ccc cct ctc aag ctg aac ggc atc atc cga aag tac act			4121
Ser Trp Leu Pro Pro Leu Lys Leu Asn Gly Ile Ile Arg Lys Tyr Thr			
1210		1215	1220
gta ttc tgc tcc cac ccc tat ccc aca gtg atc agc gag ttt gag gcc			4169
Val Phe Cys Ser His Pro Tyr Pro Thr Val Ile Ser Glu Phe Glu Ala			
1225		1230	1235
tct ccc gac tcg ttt tcc tac aga att ccc aac ctg agt agg aat cgt			4217
Ser Pro Asp Ser Phe Ser Tyr Arg Ile Pro Asn Leu Ser Arg Asn Arg			
1240		1245	1250
cag tac agc gtc tgg gtg gct gtt act tca gcc gga aga ggc aac			4265
Gln Tyr Ser Val Trp Val Val Ala Val Thr Ser Ala Gly Arg Gly Asn			
1260		1265	1270
agc agt gaa atc atc aca gtc gag cca cta gca aaa gct cct gca cga			4313
Ser Ser Glu Ile Ile Thr Val Glu Pro Leu Ala Lys Ala Pro Ala Arg			
1275		1280	1285
atc ctg acc ttc agt ggg aca gtg act act cca tgg atg aaa gac att			4361
Ile Leu Thr Phe Ser Gly Thr Val Thr Thr Pro Trp Met Lys Asp Ile			
1290		1295	1300
gtc ttg cct tgt aag gct gtt ggg gac cct tct cct gca gtc aaa tgg			4409
Val Leu Pro Cys Lys Ala Val Gly Asp Pro Ser Pro Ala Val Lys Trp			
1305		1310	1315
atg aaa gac agt aac ggg aca ccc agt cta gta acg att gat ggg cgg			4457
Met Lys Asp Ser Asn Gly Thr Pro Ser Leu Val Thr Ile Asp Gly Arg			
1320		1325	1330
agg agc atc ttt agc aac gga agc ttc att att cgc acg gtg aaa gca			4505
Arg Ser Ile Phe Ser Asn Gly Ser Phe Ile Ile Arg Thr Val Lys Ala			
1340		1345	1350
gaa gac tcc ggc tat tac agc tgc att gcc aat aac aac tgg gga tct			4553

Glu Asp Ser Gly Tyr Tyr Ser Cys Ile Ala Asn Asn Asn Trp Gly Ser			
1355	1360	1365	
gat gaa att att tta aac tta caa gta caa gtt cca cca gat cag cct			4601
Asp Glu Ile Ile Leu Asn Leu Gln Val Gln Val Pro Pro Asp Gln Pro			
1370	1375	1380	
cggttaca gtc tcc aag acc acg tct tcc tcc atc acc ctt tct tgg			4649
Arg Leu Thr Val Ser Lys Thr Thr Ser Ser Ile Thr Leu Ser Trp			
1385	1390	1395	
ctc cct gga gac aac ggg ggc agc tct atc aga gga tac ata ctg cag			4697
Leu Pro Gly Asp Asn Gly Gly Ser Ser Ile Arg Gly Tyr Ile Leu Gln			
1400	1405	1410	1415
tac tcc gag gac aat agt gag cag tgg ggg agt ttt cca atc agc ccc			4745
Tyr Ser Glu Asp Asn Ser Glu Gln Trp Gly Ser Phe Pro Ile Ser Pro			
1420	1425	1430	
agc gaa cgt tcc tat cgc ttg gaa aat ctc aaa tgt ggg act tgg tat			4793
Ser Glu Arg Ser Tyr Arg Leu Glu Asn Leu Lys Cys Gly Thr Trp Tyr			
1435	1440	1445	
aag ttc aca ctg aca gcc caa aat gga gtg ggc cca ggg cgc ata agt			4841
Lys Phe Thr Leu Thr Ala Gln Asn Gly Val Gly Pro Gly Arg Ile Ser			
1450	1455	1460	
gaa atc ata gaa gca aag acc tta gga aaa gag ccc cag ttc tca aag			4889
Glu Ile Ile Glu Ala Lys Thr Leu Gly Lys Glu Pro Gln Phe Ser Lys			
1465	1470	1475	
gag cag gag ctg ttt gcc agc atc aac acc aca cgc gtg agg ctg aac			4937
Glu Gln Glu Leu Phe Ala Ser Ile Asn Thr Thr Arg Val Arg Leu Asn			
1480	1485	1490	1495
ctc att ggc tgg aat gat ggc ggc tgc ccc atc acc tcc ttc aca cta			4985
Leu Ile Gly Trp Asn Asp Gly Gly Cys Pro Ile Thr Ser Phe Thr Leu			
1500	1505	1510	
gag tac agg ccc ttt ggg acc aca gtt tgg acc aca gct cag agg acc			5033
Glu Tyr Arg Pro Phe Gly Thr Thr Val Trp Thr Thr Ala Gln Arg Thr			
1515	1520	1525	
tct ctc tcc aag tcc tac atc ctg tat gac ctg cag gaa gcc acc tgg			5081
Ser Leu Ser Lys Ser Tyr Ile Leu Tyr Asp Leu Gln Glu Ala Thr Trp			
1530	1535	1540	
tat gag ctg cag atg cgg gtg tgc aac agt gcg ggc tgc gcg gag aag			5129

Tyr	Glu	Leu	Gln	Met	Arg	Val	Cys	Asn	Ser	Ala	Gly	Cys	Ala	Glu	Lys	
1545																
cag	gcc	aac	ttc	gct	acg	ctg	aac	tac	gat	ggc	agt	aca	att	cct	cca	5177
Gln	Ala	Asn	Phe	Ala	Thr	Leu	Asn	Tyr	Asp	Gly	Ser	Thr	Ile	Pro	Pro	
1560																
ctc	att	aag	tca	gtt	gtc	caa	aac	gaa	gaa	ggg	ctg	acg	acc	aac	gag	5225
Leu	Ile	Lys	Ser	Val	Val	Gln	Asn	Glu	Glu	Gly	Leu	Thr	Thr	Asn	Glu	
1580																
ggg	ctc	aag	atg	ctg	gtg	acc	atc	tcc	tgt	atc	ctg	gtg	ggg	gtc	ttg	5273
Gly	Leu	Lys	Met	Leu	Val	Thr	Ile	Ser	Cys	Ile	Leu	Val	Gly	Val	Leu	
1595																
ctg	ctg	ttt	gtg	ctc	ctg	ctg	gtt	gtg	cgg	agg	agg	cgg	cgg	gag	cag	5321
Leu	Leu	Phe	Val	Leu	Leu	Leu	Val	Val	Arg	Arg	Arg	Arg	Arg	Arg	Glu	Gln
1610																
agg	cta	aag	agg	ctg	cga	gat	gca	aag	agt	tta	gct	gaa	atg	ctc	atg	5369
Arg	Leu	Lys	Arg	Leu	Arg	Asp	Ala	Lys	Ser	Leu	Ala	Glu	Met	Leu	Met	
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agt	aag	aat	acc	cgg	act	tca	gat	acg	tta	agc	aag	caa	cag	cag	acc	5417
Ser	Lys	Asn	Thr	Arg	Ser	Asp	Thr	Leu	Ser	Lys	Gln	Gln	Gln	Thr		
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ctg	cga	atg	cac	atc	gac	ata	ccc	agg	gct	cag	ctt	ttg	att	gaa	gag	5465
Leu	Arg	Met	His	Ile	Asp	Ile	Pro	Arg	Ala	Gln	Leu	Leu	Ile	Glu	Glu	
1660																
aga	gac	acg	atg	gag	acc	att	gat	gat	cgc	tcc	acg	gtt	ctg	ttg	acg	5513
Arg	Asp	Thr	Met	Glu	Thr	Ile	Asp	Asp	Arg	Ser	Thr	Val	Leu	Leu	Thr	
1675																
gat	gct	gac	ttt	gga	gag	gca	gct	aag	cag	aag	tcc	ctg	acg	gtc	act	5561
Asp	Ala	Asp	Phe	Gly	Glu	Ala	Ala	Lys	Gln	Lys	Ser	Leu	Thr	Val	Thr	
1690																
cac	acg	gtc	cat	tac	caa	tcg	gtg	tct	cag	gcc	act	ggg	ccc	tta	gtg	5609
His	Thr	Val	His	Tyr	Gln	Ser	Val	Ser	Gln	Ala	Thr	Gly	Pro	Leu	Val	
1705																
gat	gtt	tca	gac	gct	cg	ccg	gga	acg	aat	ccc	acc	acc	agg	agg	aat	5657
Asp	Val	Ser	Asp	Ala	Arg	Pro	Gly	Thr	Asn	Pro	Thr	Thr	Arg	Arg	Asn	
1720																
gcc	aag	gct	ggg	ccc	aca	gca	aga	aac	cgc	tat	gcc	agc	cag	tgg	acc	5705

Ala Lys Ala Gly Pro Thr Ala Arg Asn Arg Tyr Ala Ser Gln Trp Thr			
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ctc aac cga ccc cac ccc acc atc tca gca cac acc ctc acc aca gac			5753
Leu Asn Arg Pro His Pro Thr Ile Ser Ala His Thr Leu Thr Thr Asp			
1755	1760	1765	
tgg agg ctg cca aca ccc agg gct gca gga tca gta gac aaa gag agc			5801
Trp Arg Leu Pro Thr Pro Arg Ala Ala Gly Ser Val Asp Lys Glu Ser			
1770	1775	1780	
gac agt tac agc gtc agc ccc tcg caa gac aca gat cga gca aga agc			5849
Asp Ser Tyr Ser Val Ser Pro Ser Gln Asp Thr Asp Arg Ala Arg Ser			
1785	1790	1795	
agc atg gtc tcc aca gaa agt gcc tcc tcc act tac gaa gaa ctg gcc			5897
Ser Met Val Ser Thr Glu Ser Ala Ser Ser Thr Tyr Glu Glu Leu Ala			
1800	1805	1810	1815
agg gcc tac gaa cac gcc aag atg gaa gag caa ctg agg cac gcc aag			5945
Arg Ala Tyr Glu His Ala Lys Met Glu Glu Gln Leu Arg His Ala Lys			
1820	1825	1830	
ttc acc atc acg gag tgc ttc ata tca gac acg tca tcg gag cag ttg			5993
Phe Thr Ile Thr Glu Cys Phe Ile Ser Asp Thr Ser Ser Glu Gln Leu			
1835	1840	1845	
acg gca ggg aca aat gag tac acg gac agt ctg acc tcc agc acc cct			6041
Thr Ala Gly Thr Asn Glu Tyr Thr Asp Ser Leu Thr Ser Ser Thr Pro			
1850	1855	1860	
tcc gaa tcg gga atc tgc agg ttc act gca tct ccc ccc aaa cct cag			6089
Ser Glu Ser Gly Ile Cys Arg Phe Thr Ala Ser Pro Pro Lys Pro Gln			
1865	1870	1875	
gat gga gga aga gta atg aat atg gca gtt cca aag gca atc ggc cag			6137
Asp Gly Gly Arg Val Met Asn Met Ala Val Pro Lys Ala Ile Gly Gln			
1880	1885	1890	1895
gtg acc tca tac att tgc ctc cat acc tta gaa tgg act ttt tgt			6182
Val Thr Ser Tyr Ile Cys Leu His Thr Leu Glu Trp Thr Phe Cys			
1900	1905	1910	
taaaccgagg tggccaggc accagcaggg acctgagctt aggacaagca tgcttggAAC			6242
ctcagaaaag ccggaccctg aagcgccccca cggcctgga gccccatcccg atggaagccg			6302
cctccctccgc ctccctccacg agagaaggac agtcgtggca gcccggggcc gtggccacat			6362

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tggataaca gacagcatga ctggacagcg gttgtaaata caattcaaac aattcaatca 6542  
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<213> HUMAN

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Glu Val Val Phe Ala Ser Thr Thr Gly Thr Leu Val Pro Cys Pro Ala  
35 40 45  
Ala Gly Ile Pro Pro Val Thr Leu Arg Trp Tyr Leu Ala Thr Gly Glu  
50 55 60  
Glu Ile Tyr Asp Val Pro Gly Ile Arg His Val His Pro Asn Gly Thr  
65 70 75 80  
Leu Gln Ile Phe Pro Phe Pro Ser Ser Phe Ser Thr Leu Ile His  
85 90 95  
Asp Asn Thr Tyr Tyr Cys Thr Ala Glu Asn Pro Ser Gly Lys Ile Arg  
100 105 110  
Ser Gln Asp Val His Ile Lys Ala Val Leu Arg Glu Pro Tyr Thr Val  
115 120 125  
Arg Val Glu Asp Gln Lys Thr Met Arg Gly Asn Val Ala Val Phe Lys  
130 135 140  
Cys Ile Ile Pro Ser Ser Val Glu Ala Tyr Ile Thr Val Val Ser Trp  
145 150 155 160

Glu Lys Asp Thr Val Ser Leu Val Ser Gly Ser Arg Phe Leu Ile Thr  
165 170 175

Ser Thr Gly Ala Leu Tyr Ile Lys Asp Val Gln Asn Glu Asp Gly Leu  
180 185 190

Tyr Asn Tyr Arg Cys Ile Thr Arg His Arg Tyr Thr Gly Glu Thr Arg  
195 200 205

Gln Ser Asn Ser Ala Arg Leu Phe Val Ser Asp Pro Ala Asn Ser Ala  
210 215 220

Pro Ser Ile Leu Asp Gly Phe Asp His Arg Lys Ala Met Ala Gly Gln  
225 230 235 240

Arg Val Glu Leu Pro Cys Lys Ala Leu Gly His Pro Glu Pro Asp Tyr  
245 250 255

Arg Trp Leu Lys Asp Asn Met Pro Leu Glu Leu Ser Gly Arg Phe Gln  
260 265 270

Lys Thr Val Thr Gly Leu Leu Ile Glu Asn Ile Arg Pro Ser Asp Ser  
275 280 285

Gly Ser Tyr Val Cys Glu Val Ser Asn Arg Tyr Gly Thr Ala Lys Val  
290 295 300

Ile Gly Arg Leu Tyr Val Lys Gln Pro Leu Lys Ala Thr Ile Ser Pro  
305 310 315 320

Arg Lys Val Lys Ser Ser Val Gly Ser Gln Val Ser Leu Ser Cys Ser  
325 330 335

Val Thr Gly Thr Glu Asp Gln Glu Leu Ser Trp Tyr Arg Asn Gly Glu  
340 345 350

Ile Leu Asn Pro Gly Lys Asn Val Arg Ile Thr Gly Ile Asn His Glu  
355 360 365

Asn Leu Ile Met Asp His Met Val Lys Ser Asp Gly Gly Ala Tyr Gln  
370 375 380

Cys Phe Val Arg Lys Asp Lys Leu Ser Ala Gln Asp Tyr Val Gln Val  
385 390 395 400

Val Leu Glu Asp Gly Thr Pro Lys Ile Ile Ser Ala Phe Ser Glu Lys  
405 410 415

Val Val Ser Pro Ala Glu Pro Val Ser Leu Met Cys Asn Val Lys Gly  
420 425 430

Thr Pro Leu Pro Thr Ile Thr Trp Thr Leu Asp Asp Asp Pro Ile Leu  
435 440 445

Lys Gly Gly Ser His Arg Ile Ser Gin Met Ile Thr Ser Glu Gly Asn  
450 455 460

Val Val Ser Tyr Leu Asn Ile Ser Ser Gln Val Arg Asp Gly Gly  
465 470 475 480

Val Tyr Arg Cys Thr Ala Asn Asn Ser Ala Gly Val Val Leu Tyr Gln  
485 490 495

Ala Arg Ile Asn Val Arg Gly Pro Ala Ser Ile Arg Pro Met Lys Asn  
500 505 510

Ile Thr Ala Ile Ala Gly Arg Asp Thr Tyr Ile His Cys Arg Val Ile  
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Gly Tyr Pro Tyr Tyr Ser Ile Lys Trp Tyr Lys Asn Ser Asn Leu Leu  
530 535 540

Pro Phe Asn His Arg Gln Val Ala Phe Glu Asn Asn Gly Thr Leu Lys  
545 550 555 560

Leu Ser Asp Val Gln Lys Glu Val Asp Glu Gly Glu Tyr Thr Cys Asn  
565 570 575

Val Leu Val Gln Pro Gln Leu Ser Thr Ser Gln Ser Val His Val Thr  
580 585 590

Val Lys Val Pro Pro Phe Ile Gln Pro Phe Glu Phe Pro Arg Phe Ser  
595 600 605

Ile Gly Gln Arg Val Phe Ile Pro Cys Val Val Ser Gly Asp Leu  
610 615 620

Pro Ile Thr Ile Thr Trp Gln Lys Asp Gly Arg Pro Ile Pro Gly Ser  
625 630 635 640

Leu Gly Val Thr Ile Asp Asn Ile Asp Phe Thr Ser Ser Leu Arg Ile  
645 650 655

Ser Asn Leu Ser Leu Met His Asn Gly Asn Tyr Thr Cys Ile Ala Arg  
660 665 670

Asn Glu Ala Ala Ala Val Glu His Gln Ser Gln Leu Ile Val Arg Val  
675 680 685

Pro Pro Lys Phe Val Val Gln Pro Arg Asp Gln Asp Gly Ile Tyr Gly  
690 695 700

Lys Ala Val Ile Leu Asn Cys Ser Ala Glu Gly Tyr Pro Val Pro Thr  
705 710 715 720

Ile Val Trp Lys Phe Ser Lys Gly Ala Gly Val Pro Gln Phe Gln Pro  
725 730 735

Ile Ala Leu Asn Gly Arg Ile Gln Val Leu Ser Asn Gly Ser Leu Leu  
740 745 750

Ile Lys His Val Val Glu Glu Asp Ser Gly Tyr Tyr Leu Cys Lys Val  
755 760 765

Ser Asn Asp Val Gly Ala Asp Val Ser Lys Ser Met Tyr Leu Thr Val  
770 775 780

Lys Ile Pro Ala Met Ile Thr Ser Tyr Pro Asn Thr Thr Leu Ala Thr  
785 790 795 800

Gln Gly Gln Lys Lys Glu Met Ser Cys Thr Ala His Gly Glu Lys Pro  
805 810 815

Ile Ile Val Arg Trp Glu Lys Glu Asp Arg Ile Ile Asn Pro Glu Met  
820 825 830

Ala Arg Tyr Leu Val Ser Thr Lys Glu Val Gly Glu Val Ile Ser  
835 840 845

Thr Leu Gln Ile Leu Pro Thr Val Arg Glu Asp Ser Gly Phe Phe Ser  
850 855 860

Cys His Ala Ile Asn Ser Tyr Gly Glu Asp Arg Gly Ile Ile Gln Leu  
865 870 875 880

Thr Val Gln Glu Pro Pro Asp Pro Pro Glu Ile Glu Ile Lys Asp Val  
885 890 895

Lys Ala Arg Thr Ile Thr Leu Arg Trp Thr Met Gly Phe Asp Gly Asn  
900 905 910

Ser Pro Ile Thr Gly Tyr Asp Ile Glu Cys Lys Asn Lys Ser Asp Ser  
915 920 925

Trp Asp Ser Ala Gln Arg Thr Lys Asp Val Ser Pro Gln Leu Asn Ser  
930 935 940

Ala Thr Ile Ile Asp Ile His Pro Ser Ser Thr Tyr Ser Ile Arg Met  
945 950 955 960

Tyr Ala Lys Asn Arg Ile Gly Lys Ser Glu Pro Ser Asn Glu Leu Thr  
965 970 975

Ile Thr Ala Asp Glu Ala Ala Pro Asp Gly Pro Pro Gln Glu Val His  
980 985 990

Leu Glu Pro Ile Ser Ser Gln Ser Ile Arg Val Thr Trp Lys Ala Pro  
995 1000 1005

Lys Lys His Leu Gln Asn Gly Ile Ile Arg Gly Tyr Gln Ile Gly Tyr  
1010 1015 1020

Arg Glu Tyr Ser Thr Gly Gly Asn Phe Gln Phe Asn Ile Ile Ser Val  
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Asp Thr Ser Gly Asp Ser Glu Val Tyr Thr Leu Asp Asn Leu Asn Lys  
1045 1050 1055

Phe Thr Gln Tyr Gly Leu Val Val Gln Ala Cys Asn Arg Ala Gly Thr  
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Gly Pro Ser Ser Gln Glu Ile Ile Thr Thr Leu Glu Asp Val Pro  
1075 1080 1085

Ser Tyr Pro Pro Glu Asn Val Gln Ala Ile Ala Thr Ser Pro Glu Ser  
1090 1095 1100

Ile Ser Ile Ser Trp Ser Thr Leu Ser Lys Glu Ala Leu Asn Gly Ile  
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Leu Gln Gly Phe Arg Val Ile Tyr Trp Ala Asn Leu Met Asp Gly Glu  
1125 1130 1135

Leu Gly Glu Ile Lys Asn Ile Thr Thr Gln Pro Ser Leu Glu Leu  
1140 1145 1150

Asp Gly Leu Glu Lys Tyr Thr Asn Tyr Ser Ile Gln Val Leu Ala Phe  
1155 1160 1165

Thr Arg Ala Gly Asp Gly Val Arg Ser Glu Gln Ile Phe Thr Arg Thr  
1170 1175 1180

Lys Glu Asp Val Pro Gly Pro Pro Ala Gly Val Lys Ala Ala Ala Ala  
 185 1190 1195 1200  
 Ser Ala Ser Met Val Phe Val Ser Trp Leu Pro Pro Leu Lys Leu Asn  
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 Gly Ile Ile Arg Lys Tyr Thr Val Phe Cys Ser His Pro Tyr Pro Thr  
 1220 1225 1230  
 Val Ile Ser Glu Phe Glu Ala Ser Pro Asp Ser Phe Ser Tyr Arg Ile  
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 Pro Asn Leu Ser Arg Asn Arg Gln Tyr Ser Val Trp Val Val Ala Val  
 1250 1255 1260  
 Thr Ser Ala Gly Arg Gly Asn Ser Ser Glu Ile Ile Thr Val Glu Pro  
 265 1270 1275 1280  
 Leu Ala Lys Ala Pro Ala Arg Ile Leu Thr Phe Ser Gly Thr Val Thr  
 1285 1290 1295  
 Thr Pro Trp Met Lys Asp Ile Val Leu Pro Cys Lys Ala Val Gly Asp  
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 Pro Ser Pro Ala Val Lys Trp Met Lys Asp Ser Asn Gly Thr Pro Ser  
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 Ile Ile Arg Thr Val Lys Ala Glu Asp Ser Gly Tyr Tyr Ser Cys Ile  
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 Ala Asn Asn Asn Trp Gly Ser Asp Glu Ile Ile Leu Asn Leu Gln Val  
 1365 1370 1375  
 Gln Val Pro Pro Asp Gln Pro Arg Leu Thr Val Ser Lys Thr Thr Ser  
 1380 1385 1390  
 Ser Ser Ile Thr Leu Ser Trp Leu Pro Gly Asp Asn Gly Gly Ser Ser  
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 Gly Ser Phe Pro Ile Ser Pro Ser Glu Arg Ser Tyr Arg Leu Glu Asn  
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Leu Lys Cys Gly Thr Trp Tyr Lys Phe Thr Leu Thr Ala Gln Asn Gly  
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 Val Gly Pro Gly Arg Ile Ser Glu Ile Ile Glu Ala Lys Thr Leu Gly  
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 Lys Glu Pro Gln Phe Ser Lys Glu Gln Glu Leu Phe Ala Ser Ile Asn  
 1475 1480 1485  
  
 Thr Thr Arg Val Arg Leu Asn Leu Ile Gly Trp Asn Asp Gly Gly Cys  
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 Trp Thr Thr Ala Gln Arg Thr Ser Leu Ser Lys Ser Tyr Ile Leu Tyr  
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 Leu Ser Lys Gln Gln Gln Thr Leu Arg Met His Ile Asp Ile Pro Arg  
 1650 1655 1660  
  
 Ala Gln Leu Leu Ile Glu Glu Arg Asp Thr Met Glu Thr Ile Asp Asp  
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 Arg Ser Thr Val Leu Leu Thr Asp Ala Asp Phe Gly Glu Ala Ala Lys  
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Gln Lys Ser Leu Thr Val Thr His Thr Val His Tyr Gln Ser Val Ser  
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 Gln Ala Thr Gly Pro Leu Val Asp Val Ser Asp Ala Arg Pro Gly Thr  
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 Asn Pro Thr Thr Arg Arg Asn Ala Lys Ala Gly Pro Thr Ala Arg Asn  
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 Arg Tyr Ala Ser Gln Trp Thr Leu Asn Arg Pro His Pro Thr Ile Ser  
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 Ala His Thr Leu Thr Thr Asp Trp Arg Leu Pro Thr Pro Arg Ala Ala  
 1765 1770 1775  
  
 Gly Ser Val Asp Lys Glu Ser Asp Ser Tyr Ser Val Ser Pro Ser Gln  
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 Asp Thr Asp Arg Ala Arg Ser Ser Met Val Ser Thr Glu Ser Ala Ser  
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 Ser Thr Tyr Glu Glu Leu Ala Arg Ala Tyr Glu His Ala Lys Met Glu  
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 Glu Gln Leu Arg His Ala Lys Phe Thr Ile Thr Glu Cys Phe Ile Ser  
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 Asp Thr Ser Ser Glu Gln Leu Thr Ala Gly Thr Asn Glu Tyr Thr Asp  
 1845 1850 1855  
  
 Ser Leu Thr Ser Ser Thr Pro Ser Glu Ser Gly Ile Cys Arg Phe Thr  
 1860 1865 1870  
  
 Ala Ser Pro Pro Lys Pro Gln Asp Gly Gly Arg Val Met Asn Met Ala  
 1875 1880 1885  
  
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<220>  
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caccaggata caggagatgg tcaccagcat cttagcccc tcgttggtcg tcagcccttc 180  
ttcggtttgg acaactgact taatgagtgg aggaattgtt ctgccatcgt agttcagcgt 240  
agcgaagtttgcctgcttcc cgcgcagcc cgcactgttg cacacccgca tctgcagctc 300  
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agctgtggtc caaaactgtgg tcccaaag 388

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<211> 20  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence:MboI linker  
sequence

<400> 4  
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<210> 5  
<211> 20  
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<220>  
<223> Description of Artificial Sequence:primer

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<212> DNA  
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<220>  
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 <212> DNA

<213> MOUSE

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<210> 9

<211> 2173

<212> DNA

<213> MOUSE

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Met Trp Ile Leu Ala Leu Ser  
1 5

ttg ttc cag agc ttc gcg aat gtt ttc agt gaa gac cta cac tcc agc 521

Leu	Phe	Gln	Ser	Phe	Ala	Asn	Val	Phe	Ser	Glu	Asp	Leu	His	Ser	Ser	
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Leu	Tyr	Phe	Val	Asn	Ala	Ser	Leu	Gln	Glu	Val	Val	Phe	Ala	Ser	Thr	
25								30				35				
acg ggg act ctg gtg ccc tgc ccc gca gca ggc atc cct cct gtg act															617	
Thr	Gly	Thr	Leu	Val	Pro	Cys	Pro	Ala	Ala	Gly	Ile	Pro	Pro	Val	Thr	
40								45				50			55	
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Leu	Arg	Trp	Tyr	Leu	Ala	Thr	Gly	Glu	Glu	Ile	Tyr	Asp	Val	Pro	Gly	
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Ile	Arg	His	Val	His	Pro	Asn	Gly	Thr	Leu	Gln	Ile	Phe	Pro	Phe	Pro	
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cct tca agc ttc agt acc tta atc cat gat aat act tat tat tgc aca															761	
Pro	Ser	Ser	Phe	Ser	Thr	Leu	Ile	His	Asp	Asn	Thr	Tyr	Tyr	Cys	Thr	
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Ala	Glu	Asn	Pro	Ser	Gly	Lys	Ile	Arg	Ser	Gln	Asp	Val	His	Ile	Lys	
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gct gtt tta cgg gag ccc tat aca gtc cgt gtg gag gac cag aaa acc															857	
Ala	Val	Leu	Arg	Glu	Pro	Tyr	Thr	Val	Arg	Val	Glu	Asp	Gln	Lys	Thr	
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atg aga ggc aat gtt gcg gtc ttc aag tgc att atc ccc tcc tcg gtg															905	
Met	Arg	Gly	Asn	Val	Ala	Val	Phe	Lys	Cys	Ile	Ile	Pro	Ser	Ser	Val	
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Glu	Ala	Tyr	Ile	Thr	Val	Val	Ser	Trp	Glu	Lys	Asp	Thr	Val	Ser	Leu	
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Val	Ser	Gly	Ser	Arg	Phe	Leu	Ile	Thr	Ser	Thr	Gly	Ala	Leu	Tyr	Ile	
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Lys	Asp	Val	Gln	Asn	Glu	Asp	Gly	Leu	Tyr	Asn	Tyr	Arg	Cys	Ile	Thr	
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cg <sub>g</sub> cat cga tac acc gga gag acg agg cag agc aac agc gcc aga ctt															1097	

Arg His Arg Tyr Thr Gly Glu Thr Arg Gln Ser Asn Ser Ala Arg Leu				
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Phe Val Ser Asp Pro Ala Asn Ser Ala Pro Ser Ile Leu Asp Gly Phe				
220		225	230	
gac cat cgc aaa gcc atg gct ggg cag cgt gtg gag ctg cct tgc aaa				1193
Asp His Arg Lys Ala Met Ala Gly Gln Arg Val Glu Leu Pro Cys Lys				
235	240	245		
gcg ctc ggg cac cct gag cca gat tac cgc tgg ctg aag gac aac atg				1241
Ala Leu Gly His Pro Glu Pro Asp Tyr Arg Trp Leu Lys Asp Asn Met				
250	255	260		
ccc ctg gaa ctt tca ggg agg ttc cag aag acc gtg acg ggg ctg ctc				1289
Pro Leu Glu Leu Ser Gly Arg Phe Gln Lys Thr Val Thr Gly Leu Leu				
265	270	275		
att gag aac att cgc ccc tcg gac tca ggc agc tat gtt tgt gaa gtg				1337
Ile Glu Asn Ile Arg Pro Ser Asp Ser Gly Ser Tyr Val Cys Glu Val				
280	285	290	295	
tcc aac aga tac gga act gct aag gtg ata ggc cgc ctg tac gtg aaa				1385
Ser Asn Arg Tyr Gly Thr Ala Lys Val Ile Gly Arg Leu Tyr Val Lys				
300	305	310		
cag cca ctg aaa gcc acc atc agt ccc agg aag gtt aaa agc agc gtg				1433
Gln Pro Leu Lys Ala Thr Ile Ser Pro Arg Lys Val Lys Ser Ser Val				
315	320	325		
ggc agc caa gtt tcc ttg tcc tgc agc gtg aca gga act gag gac cag				1481
Gly Ser Gln Val Ser Leu Ser Cys Ser Val Thr Gly Thr Glu Asp Gln				
330	335	340		
gaa ctc tcc tgg tac cgc aat ggt gaa atc ctc aac cct gga aaa aat				1529
Glu Leu Ser Trp Tyr Arg Asn Gly Glu Ile Leu Asn Pro Gly Lys Asn				
345	350	355		
gtg agg atc aca ggg atc aac cac gaa aac ctt ata atg gat cac atg				1577
Val Arg Ile Thr Gly Ile Asn His Glu Asn Leu Ile Met Asp His Met				
360	365	370	375	
gtc aaa agt gac ggg ggc gca tac cag tgc ttt gtg cgc aag gac aag				1625
Val Lys Ser Asp Gly Gly Ala Tyr Gln Cys Phe Val Arg Lys Asp Lys				
380	385	390		
ctg tcc gct caa gac tat gtg cag gtg gtc ctt gaa gat gga act ccc				1673

Leu Ser Ala Gln Asp Tyr Val Gln Val Val Leu Glu Asp Gly Thr Pro			
395	400	405	
aaa att att tct gcc ttt agt gaa aag gtg gtg agt cca gca gag ccg			1721
Lys Ile Ile Ser Ala Phe Ser Glu Lys Val Val Ser Pro Ala Glu Pro			
410	415	420	
gtt tcc ctt atg tgc aac gtg aag gga aca cct ttg ccc acg atc acg			1769
Val Ser Leu Met Cys Asn Val Lys Gly Thr Pro Leu Pro Thr Ile Thr			
425	430	435	
tgg acc ctg gac gat gac ccg att ctc aag ggt ggc agt cac cgc atc			1817
Trp Thr Leu Asp Asp Asp Pro Ile Leu Lys Gly Ser His Arg Ile			
440	445	450	455
agc cag atg atc acg tcg gag ggg aac gtg gtc agc tac ctg aac atc			1865
Ser Gln Met Ile Thr Ser Glu Gly Asn Val Val Ser Tyr Leu Asn Ile			
460	465	470	
tcc agc tcc cag gtc cgg gac ggg gga gtc tac cgc tgc act gcc aac			1913
Ser Ser Ser Gln Val Arg Asp Gly Gly Val Tyr Arg Cys Thr Ala Asn			
475	480	485	
aac tcg gcg gga gtc gtc ctg tac cag gct cga ata aac gta aga ggg			1961
Asn Ser Ala Gly Val Val Leu Tyr Gln Ala Arg Ile Asn Val Arg Gly			
490	495	500	
cct gca agc att cga cca atg aaa aac atc aca gca ata gca gga cgg			2009
Pro Ala Ser Ile Arg Pro Met Lys Asn Ile Thr Ala Ile Ala Gly Arg			
505	510	515	
gac aca tac att cac tgt cgt gtg att ggc tat ccg tat tac tcc att			2057
Asp Thr Tyr Ile His Cys Arg Val Ile Gly Tyr Pro Tyr Tyr Ser Ile			
520	525	530	535
aaa tgg tac aag aac tct aac ctg ctt cct ttc aac cac cgc caa gtg			2105
Lys Trp Tyr Lys Asn Ser Asn Leu Leu Pro Phe Asn His Arg Gln Val			
540	545	550	
gca ttt gag aac aat gga act ctt aaa ctt tca gat gtg caa aag gaa			2153
Ala Phe Glu Asn Asn Gly Thr Leu Lys Leu Ser Asp Val Gln Lys Glu			
555	560	565	
gtg gac gag ggg gag tac acg tgc aac gtg ttg gtt caa cca caa ctc			2201
Val Asp Glu Gly Glu Tyr Thr Cys Asn Val Leu Val Gln Pro Gln Leu			
570	575	580	
tcc acc agc cag agc gtc cac gtg acc gtg aaa gtt ccg cct ttc ata			2249

Ser	Thr	Ser	Gln	Ser	Val	His	Val	Thr	Val	Lys	Val	Pro	Pro	Phe	Ile	
585					590					595						
caa	ccc	ttt	gag	ttt	cca	aga	ttc	tcc	att	ggg	cag	ccg	gtc	ttc	atc	2297
Gln	Pro	Phe	Glu	Phe	Pro	Arg	Phe	Ser	Ile	Gly	Gln	Arg	Val	Phe	Ile	
600		605						610					615			
ccc	tgt	gtt	gtg	gtc	tca	ggg	gac	tta	ccc	atc	acg	atc	acc	tgg	cag	2345
Pro	Cys	Val	Val	Val	Ser	Gly	Asp	Leu	Pro	Ile	Thr	Ile	Thr	Trp	Gln	
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aag	gat	ggc	cgg	cca	atc	cct	ggg	agc	ctt	ggg	gtg	acc	att	gac	aat	2393
Lys	Asp	Gly	Arg	Pro	Ile	Pro	Gly	Ser	Leu	Gly	Val	Thr	Ile	Asp	Asn	
					635			640				645				
att	gac	ttc	acg	agc	tcc	ttg	agg	att	tcc	aat	ctc	tcg	ctc	atg	cac	2441
Ile	Asp	Phe	Thr	Ser	Ser	Leu	Arg	Ile	Ser	Asn	Leu	Ser	Leu	Met	His	
					650		655				660					
aat	ggg	aat	tac	acc	tgc	ata	gcc	cgg	aat	gag	gcc	gcc	gct	gtg	gag	2489
Asn	Gly	Asn	Tyr	Thr	Cys	Ile	Ala	Arg	Asn	Glu	Ala	Ala	Ala	Val	Glu	
					665		670				675					
cac	caa	agc	cag	ttg	att	gtc	aga	gtt	cct	ccc	aag	ttt	gtg	gtt	cag	2537
His	Gln	Ser	Gln	Leu	Ile	Val	Arg	Val	Pro	Pro	Lys	Phe	Val	Val	Gln	
					680		685			690			695			
cca	cgg	gac	cag	gac	ggg	att	tat	ggc	aaa	gca	gtc	atc	ctc	aat	tgt	2585
Pro	Arg	Asp	Gln	Asp	Gly	Ile	Tyr	Gly	Lys	Ala	Val	Ile	Leu	Asn	Cys	
					700			705				710				
tct	gct	gag	ggt	tac	cct	gta	cct	acc	atc	gtg	tgg	aaa	ttc	tct	aaa	2633
Ser	Ala	Glu	Gly	Tyr	Pro	Val	Pro	Thr	Ile	Val	Trp	Lys	Phe	Ser	Lys	
					715		720				725					
ggt	gct	ggg	gtt	ccc	cag	ttc	cag	cca	att	gcc	cta	aat	ggc	cga	atc	2681
Gly	Ala	Gly	Val	Pro	Gln	Phe	Gln	Pro	Ile	Ala	Leu	Asn	Gly	Arg	Ile	
					730		735				740					
caa	gtt	ctc	agc	aat	ggg	tcg	ttg	ctg	atc	aag	cat	gtc	gtg	gag	gaa	2729
Gln	Val	Leu	Ser	Asn	Gly	Ser	Leu	Leu	Ile	Lys	His	Val	Val	Glu	Glu	
					745		750			755						
gac	agt	ggc	tac	tac	ctc	tgc	aag	gtc	agc	aac	gat	gtg	ggc	gca	gac	2777
Asp	Ser	Gly	Tyr	Tyr	Leu	Cys	Lys	Val	Ser	Asn	Asp	Val	Gly	Ala	Asp	
					760		765			770			775			
gtc	agc	aag	tcc	atg	tac	ctc	acg	gtt	aaa	att	cct	gcg	atg	ata	aca	2825

Val Ser Lys Ser Met Tyr Leu Thr Val Lys Ile Pro Ala Met Ile Thr			
780	785	790	
tcc tat cca aat act acc ctg gcc acg cag ggg cag aaa aag gag atg			2873
Ser Tyr Pro Asn Thr Thr Leu Ala Thr Gln Gly Gln Lys Lys Glu Met			
795	800	805	
agc tgc acg gcg cat ggt gag aag ccc att ata gtc cgc tgg gag aag			2921
Ser Cys Thr Ala His Gly Glu Lys Pro Ile Ile Val Arg Trp Glu Lys			
810	815	820	
gag gac cga atc att aac cct gag atg gcc cgt tat ctt gtg tcc acc			2969
Glu Asp Arg Ile Ile Asn Pro Glu Met Ala Arg Tyr Leu Val Ser Thr			
825	830	835	
aag gag gtg gga gaa gag gtg att tct act ctg cag att ttg cca act			3017
Lys Glu Val Gly Glu Val Ile Ser Thr Leu Gln Ile Leu Pro Thr			
840	845	850	855
gtg aga gaa gat tct ggt ttc ttt tcc tgc cat gct att aat tct tat			3065
Val Arg Glu Asp Ser Gly Phe Phe Ser Cys His Ala Ile Asn Ser Tyr			
860	865	870	
ggg gag gac cgt gga ata att cag ctc aca gtg caa gag ccc cca gac			3113
Gly Glu Asp Arg Gly Ile Ile Gln Leu Thr Val Gln Glu Pro Pro Asp			
875	880	885	
cct ccc gaa att gag atc aaa gat gtc aaa gca cgc aca att acg ctc			3161
Pro Pro Glu Ile Glu Ile Lys Asp Val Lys Ala Arg Thr Ile Thr Leu			
890	895	900	
agg tgg acc atg ggg ttt gat gga aac agt ccc atc aca ggc tac gat			3209
Arg Trp Thr Met Gly Phe Asp Gly Asn Ser Pro Ile Thr Gly Tyr Asp			
905	910	915	
att gaa tgc aaa aat aaa tca gac tcc tgg gat tct gct cag aga acc			3257
Ile Glu Cys Lys Asn Lys Ser Asp Ser Trp Asp Ser Ala Gln Arg Thr			
920	925	930	935
aaa gat gtt tcc cct cag ctg aac tcg gcc acc atc att gat atc cac			3305
Lys Asp Val Ser Pro Gln Leu Asn Ser Ala Thr Ile Ile Asp Ile His			
940	945	950	
cct tcc tcc acc tac agc atc cgc atg tac gcc aag aac cgg att ggc			3353
Pro Ser Ser Thr Tyr Ser Ile Arg Met Tyr Ala Lys Asn Arg Ile Gly			
955	960	965	
aag agc gag ccc agc aac gag ctc acc atc acg gcg gac gag gca gct			3401

Lys Ser Glu Pro Ser Asn Glu Leu Thr Ile Thr Ala Asp Glu Ala Ala			
970	975	980	
cct gat ggt cca cct cag gaa gtt cac ctg gag cct ata tca tct cag	3449		
Pro Asp Gly Pro Pro Gln Glu Val His Leu Glu Pro Ile Ser Ser Gln			
985	990	995	
agc atc agg gtc aca tgg aag gct ccc aag aaa cat ttg caa aat ggg	3497		
Ser Ile Arg Val Thr Trp Lys Ala Pro Lys Lys His Leu Gln Asn Gly			
1000	1005	1010	1015
att atc cgt ggc tac caa ata ggt tac cga gag tac agc act ggg ggt	3545		
Ile Ile Arg Gly Tyr Gln Ile Gly Tyr Arg Glu Tyr Ser Thr Gly Gly			
1020	1025	1030	
aac ttc caa ttc aac att atc agt gtc gac acc agc ggg gac agt gag	3593		
Asn Phe Gln Phe Asn Ile Ile Ser Val Asp Thr Ser Gly Asp Ser Glu			
1035	1040	1045	
gtt tac acc ctg gac aac ctg aat aag ttc act cag tac ggc ctg gtg	3641		
Val Tyr Thr Leu Asp Asn Leu Asn Lys Phe Thr Gln Tyr Gly Leu Val			
1050	1055	1060	
gtg cag gcc tgt aac cgg gcc ggc acg ggg cct tct tct cag gaa atc	3689		
Val Gln Ala Cys Asn Arg Ala Gly Thr Gly Pro Ser Ser Gln Glu Ile			
1065	1070	1075	
atc acc acc act ctc gag gat gtg ccc agt tac ccc ccc gaa aat gtc	3737		
Ile Thr Thr Leu Glu Asp Val Pro Ser Tyr Pro Pro Glu Asn Val			
1080	1085	1090	1095
caa gcc ata gca aca tca cca gaa agc ata tca ata tcc tgg tcc aca	3785		
Gln Ala Ile Ala Thr Ser Pro Glu Ser Ile Ser Ile Ser Trp Ser Thr			
1100	1105	1110	
ctt tcc aag gaa gcc ttg aat gga att ctc cag ggg ttc aga gtc att	3833		
Leu Ser Lys Glu Ala Leu Asn Gly Ile Leu Gln Gly Phe Arg Val Ile			
1115	1120	1125	
tac tgg gcc aac ctc atg gac gga gag ctg ggt gag att aaa aac atc	3881		
Tyr Trp Ala Asn Leu Met Asp Gly Glu Leu Gly Glu Ile Lys Asn Ile			
1130	1135	1140	
acc acc aca cag cct tca ctg gag ctg gac ggg ctg gaa aag tac acc	3929		
Thr Thr Thr Gln Pro Ser Leu Glu Leu Asp Gly Leu Glu Lys Tyr Thr			
1145	1150	1155	
aac tac agc atc cag gtg ctg gcc ttc acc cgc gca gga gac ggg gtc	3977		

Asn Tyr Ser Ile Gln Val Leu Ala Phe Thr Arg Ala Gly Asp Gly Val				
1160	1165	1170	1175	
agg agt gag cag atc ttc acc cg acc aaa gag gat gtt cca ggt cct				4025
Arg Ser Glu Gln Ile Phe Thr Arg Thr Lys Glu Asp Val Pro Gly Pro				
1180	1185	1190		
ccc gcg ggt gtg aag gca gcg gcc tca gcc tcc atg gtc ttt gtg				4073
Pro Ala Gly Val Lys Ala Ala Ala Ser Ala Ser Met Val Phe Val				
1195	1200	1205		
tcc tgg ctt ccc cct ctc aag ctg aac ggc atc atc cga aag tac act				4121
Ser Trp Leu Pro Pro Leu Lys Leu Asn Gly Ile Ile Arg Lys Tyr Thr				
1210	1215	1220		
gta ttc tgc tcc cac ccc tat ccc aca gtg atc agc gag ttt gag gcc				4169
Val Phe Cys Ser His Pro Tyr Pro Thr Val Ile Ser Glu Phe Glu Ala				
1225	1230	1235		
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Ser Pro Asp Ser Phe Ser Tyr Arg Ile Pro Asn Leu Ser Arg Asn Arg				
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cag tac agc gtc tgg gtg gct gtt act tca gcc gga aga ggc aac				4265
Gln Tyr Ser Val Trp Val Val Ala Val Thr Ser Ala Gly Arg Gly Asn				
1260	1265	1270		
agc agt gaa atc atc aca gtc gag cca cta gca aaa gct cct gca cga				4313
Ser Ser Glu Ile Ile Thr Val Glu Pro Leu Ala Lys Ala Pro Ala Arg				
1275	1280	1285		
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Ile Leu Thr Phe Ser Gly Thr Val Thr Thr Pro Trp Met Lys Asp Ile				
1290	1295	1300		
gtc ttg cct tgt aag gct gtt ggg gac cct tct cct gca gtc aaa tgg				4409
Val Leu Pro Cys Lys Ala Val Gly Asp Pro Ser Pro Ala Val Lys Trp				
1305	1310	1315		
atg aaa gac agt aac ggg aca ccc agt cta gta acg att gat ggg cgg				4457
Met Lys Asp Ser Asn Gly Thr Pro Ser Leu Val Thr Ile Asp Gly Arg				
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Arg Ser Ile Phe Ser Asn Gly Ser Phe Ile Ile Arg Thr Val Lys Ala				
1340	1345	1350		
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Glu Asp Ser Gly Tyr Tyr Ser Cys Ile Ala Asn Asn Asn Trp Gly Ser			
1355	1360	1365	
gat gaa att att tta aac tta caa gta caa gtt cca cca gat cag cct 4601			
Asp Glu Ile Ile Leu Asn Leu Gln Val Gln Val Pro Pro Asp Gln Pro			
1370	1375	1380	
cggttaca gtc tcc aag acc acg tct tcc tcc atc acc ctt tct tgg 4649			
Arg Leu Thr Val Ser Lys Thr Thr Ser Ser Ile Thr Leu Ser Trp			
1385	1390	1395	
ctc cct gga gac aac ggg ggc agc tct atc aga gga tac ata ctg cag 4697			
Leu Pro Gly Asp Asn Gly Gly Ser Ser Ile Arg Gly Tyr Ile Leu Gln			
1400	1405	1410	1415
tac tcc gag gac aat agt gag cag tgg ggg agt ttt cca atc agc ccc 4745			
Tyr Ser Glu Asp Asn Ser Glu Gln Trp Gly Ser Phe Pro Ile Ser Pro			
1420	1425	1430	
agc gaa cgt tcc tat cgc ttg gaa aat ctc aaa tgt ggg act tgg tat 4793			
Ser Glu Arg Ser Tyr Arg Leu Glu Asn Leu Lys Cys Gly Thr Trp Tyr			
1435	1440	1445	
aag ttc aca ctg aca gcc caa aat gga gtg ggc cca ggg cgc ata agt 4841			
Lys Phe Thr Leu Thr Ala Gln Asn Gly Val Gly Pro Gly Arg Ile Ser			
1450	1455	1460	
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Glu Ile Ile Glu Ala Lys Thr Leu Gly Lys Glu Pro Gln Phe Ser Lys			
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1480	1485	1490	1495
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Leu Ile Gly Trp Asn Asp Gly Gly Cys Pro Ile Thr Ser Phe Thr Leu			
1500	1505	1510	
gag tac agg ccc ttt ggg acc aca gtt tgg acc aca gct cag agg acc 5033			
Glu Tyr Arg Pro Phe Gly Thr Thr Val Trp Thr Ala Gln Arg Thr			
1515	1520	1525	
tct ctc tcc aag tcc tac atc ctg tat gac ctg cag gaa gcc acc tgg 5081			
Ser Leu Ser Lys Ser Tyr Ile Leu Tyr Asp Leu Gln Glu Ala Thr Trp			
1530	1535	1540	
tat gag ctg cag atg cgg gtg tgc aac agt gcg ggc tgc gcg gag aag 5129			

Tyr Glu Leu Gln Met Arg Val Cys Asn Ser Ala Gly Cys Ala Glu Lys  
 1545 1550 1555

cag gct aaa gag gct gcg aga tgc aaa gag ttt agc tgaaatgctc 5175  
 Gln Ala Lys Glu Ala Ala Arg Cys Lys Glu Phe Ser  
 1560 1565 1570

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<212> PRT  
<213> HUMAN

<400> 11  
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Ser Glu Asp Leu His Ser Ser Leu Tyr Phe Val Asn Ala Ser Leu Gln  
20 25 30  
Glu Val Val Phe Ala Ser Thr Thr Gly Thr Leu Val Pro Cys Pro Ala  
35 40 45  
Ala Gly Ile Pro Pro Val Thr Leu Arg Trp Tyr Leu Ala Thr Gly Glu  
50 55 60  
Glu Ile Tyr Asp Val Pro Gly Ile Arg His Val His Pro Asn Gly Thr  
65 70 75 80  
Leu Gln Ile Phe Pro Phe Pro Ser Ser Phe Ser Thr Leu Ile His  
85 90 95  
Asp Asn Thr Tyr Tyr Cys Thr Ala Glu Asn Pro Ser Gly Lys Ile Arg  
100 105 110  
Ser Gln Asp Val His Ile Lys Ala Val Leu Arg Glu Pro Tyr Thr Val  
115 120 125  
Arg Val Glu Asp Gln Lys Thr Met Arg Gly Asn Val Ala Val Phe Lys  
130 135 140  
Cys Ile Ile Pro Ser Ser Val Glu Ala Tyr Ile Thr Val Val Ser Trp  
145 150 155 160  
Glu Lys Asp Thr Val Ser Leu Val Ser Gly Ser Arg Phe Leu Ile Thr  
165 170 175  
Ser Thr Gly Ala Leu Tyr Ile Lys Asp Val Gln Asn Glu Asp Gly Leu  
180 185 190  
Tyr Asn Tyr Arg Cys Ile Thr Arg His Arg Tyr Thr Gly Glu Thr Arg  
195 200 205  
Gln Ser Asn Ser Ala Arg Leu Phe Val Ser Asp Pro Ala Asn Ser Ala

210	215	220
Pro Ser Ile Leu Asp Gly Phe Asp His Arg Lys Ala Met Ala Gly Gln		
225	230	235
Arg Val Glu Leu Pro Cys Lys Ala Leu Gly His Pro Glu Pro Asp Tyr		
245	250	255
Arg Trp Leu Lys Asp Asn Met Pro Leu Glu Leu Ser Gly Arg Phe Gln		
260	265	270
Lys Thr Val Thr Gly Leu Leu Ile Glu Asn Ile Arg Pro Ser Asp Ser		
275	280	285
Gly Ser Tyr Val Cys Glu Val Ser Asn Arg Tyr Gly Thr Ala Lys Val		
290	295	300
Ile Gly Arg Leu Tyr Val Lys Gln Pro Leu Lys Ala Thr Ile Ser Pro		
305	310	315
Arg Lys Val Lys Ser Ser Val Gly Ser Gln Val Ser Leu Ser Cys Ser		
325	330	335
Val Thr Gly Thr Glu Asp Gln Glu Leu Ser Trp Tyr Arg Asn Gly Glu		
340	345	350
Ile Leu Asn Pro Gly Lys Asn Val Arg Ile Thr Gly Ile Asn His Glu		
355	360	365
Asn Leu Ile Met Asp His Met Val Lys Ser Asp Gly Gly Ala Tyr Gln		
370	375	380
Cys Phe Val Arg Lys Asp Lys Leu Ser Ala Gln Asp Tyr Val Gln Val		
385	390	395
400		
Val Leu Glu Asp Gly Thr Pro Lys Ile Ile Ser Ala Phe Ser Glu Lys		
405	410	415
Val Val Ser Pro Ala Glu Pro Val Ser Leu Met Cys Asn Val Lys Gly		
420	425	430
Thr Pro Leu Pro Thr Ile Thr Trp Thr Leu Asp Asp Asp Pro Ile Leu		
435	440	445
Lys Gly Gly Ser His Arg Ile Ser Gln Met Ile Thr Ser Glu Gly Asn		
450	455	460
Val Val Ser Tyr Leu Asn Ile Ser Ser Ser Gln Val Arg Asp Gly Gly		

465	470	475	480
Val Tyr Arg Cys Thr Ala Asn Asn Ser Ala Gly Val Val Leu Tyr Gln			
485	490	495	
Ala Arg Ile Asn Val Arg Gly Pro Ala Ser Ile Arg Pro Met Lys Asn			
500	505	510	
Ile Thr Ala Ile Ala Gly Arg Asp Thr Tyr Ile His Cys Arg Val Ile			
515	520	525	
Gly Tyr Pro Tyr Tyr Ser Ile Lys Trp Tyr Lys Asn Ser Asn Leu Leu			
530	535	540	
Pro Phe Asn His Arg Gln Val Ala Phe Glu Asn Asn Gly Thr Leu Lys			
545	550	555	560
Leu Ser Asp Val Gln Lys Glu Val Asp Glu Gly Glu Tyr Thr Cys Asn			
565	570	575	
Val Leu Val Gln Pro Gln Leu Ser Thr Ser Gln Ser Val His Val Thr			
580	585	590	
Val Lys Val Pro Pro Phe Ile Gln Pro Phe Glu Phe Pro Arg Phe Ser			
595	600	605	
Ile Gly Gln Arg Val Phe Ile Pro Cys Val Val Ser Gly Asp Leu			
610	615	620	
Pro Ile Thr Ile Thr Trp Gln Lys Asp Gly Arg Pro Ile Pro Gly Ser			
625	630	635	640
Leu Gly Val Thr Ile Asp Asn Ile Asp Phe Thr Ser Ser Leu Arg Ile			
645	650	655	
Ser Asn Leu Ser Leu Met His Asn Gly Asn Tyr Thr Cys Ile Ala Arg			
660	665	670	
Asn Glu Ala Ala Ala Val Glu His Gln Ser Gln Leu Ile Val Arg Val			
675	680	685	
Pro Pro Lys Phe Val Val Gln Pro Arg Asp Gln Asp Gly Ile Tyr Gly			
690	695	700	
Lys Ala Val Ile Leu Asn Cys Ser Ala Glu Gly Tyr Pro Val Pro Thr			
705	710	715	720
Ile Val Trp Lys Phe Ser Lys Gly Ala Gly Val Pro Gln Phe Gln Pro			

725	730	735
Ile Ala Leu Asn Gly Arg Ile Gln Val Leu Ser Asn Gly Ser Leu Leu		
740	745	750
Ile Lys His Val Val Glu Glu Asp Ser Gly Tyr Tyr Leu Cys Lys Val		
755	760	765
Ser Asn Asp Val Gly Ala Asp Val Ser Lys Ser Met Tyr Leu Thr Val		
770	775	780
Lys Ile Pro Ala Met Ile Thr Ser Tyr Pro Asn Thr Thr Leu Ala Thr		
785	790	795
800		
Gln Gly Gln Lys Lys Glu Met Ser Cys Thr Ala His Gly Glu Lys Pro		
805	810	815
Ile Ile Val Arg Trp Glu Lys Glu Asp Arg Ile Ile Asn Pro Glu Met		
820	825	830
Ala Arg Tyr Leu Val Ser Thr Lys Glu Val Gly Glu Glu Val Ile Ser .		
835	840	845
850		
855		
860		
Thr Leu Gln Ile Leu Pro Thr Val Arg Glu Asp Ser Gly Phe Phe Ser		
Cys His Ala Ile Asn Ser Tyr Gly Glu Asp Arg Gly Ile Ile Gln Leu		
865	870	875
880		
Thr Val Gln Glu Pro Pro Asp Pro Pro Glu Ile Glu Ile Lys Asp Val		
885	890	895
Lys Ala Arg Thr Ile Thr Leu Arg Trp Thr Met Gly Phe Asp Gly Asn		
900	905	910
Ser Pro Ile Thr Gly Tyr Asp Ile Glu Cys Lys Asn Lys Ser Asp Ser		
915	920	925
Trp Asp Ser Ala Gln Arg Thr Lys Asp Val Ser Pro Gln Leu Asn Ser		
930	935	940
Ala Thr Ile Ile Asp Ile His Pro Ser Ser Thr Tyr Ser Ile Arg Met		
945	950	955
960		
Tyr Ala Lys Asn Arg Ile Gly Lys Ser Glu Pro Ser Asn Glu Leu Thr		
965	970	975
Ile Thr Ala Asp Glu Ala Ala Pro Asp Gly Pro Pro Gln Glu Val His		

980	985	990
Leu Glu Pro Ile Ser Ser Gln Ser Ile Arg Val Thr Trp Lys Ala Pro		
995	1000	1005
Lys Lys His Leu Gln Asn Gly Ile Ile Arg Gly Tyr Gln Ile Gly Tyr		
1010	1015	1020
Arg Glu Tyr Ser Thr Gly Gly Asn Phe Gln Phe Asn Ile Ile Ser Val		
025	1030	1035
Asp Thr Ser Gly Asp Ser Glu Val Tyr Thr Leu Asp Asn Leu Asn Lys		
1045	1050	1055
Phe Thr Gln Tyr Gly Leu Val Val Gln Ala Cys Asn Arg Ala Gly Thr		
1060	1065	1070
Gly Pro Ser Ser Gln Glu Ile Ile Thr Thr Thr Leu Glu Asp Val Pro		
1075	1080	1085
Ser Tyr Pro Pro Glu Asn Val Gln Ala Ile Ala Thr Ser Pro Glu Ser		
1090	1095	1100
Ile Ser Ile Ser Trp Ser Thr Leu Ser Lys Glu Ala Leu Asn Gly Ile		
1095	1110	1115
Leu Gln Gly Phe Arg Val Ile Tyr Trp Ala Asn Leu Met Asp Gly Glu		
1125	1130	1135
Leu Gly Glu Ile Lys Asn Ile Thr Thr Thr Gln Pro Ser Leu Glu Leu		
1140	1145	1150
Asp Gly Leu Glu Lys Tyr Thr Asn Tyr Ser Ile Gln Val Leu Ala Phe		
1155	1160	1165
Thr Arg Ala Gly Asp Gly Val Arg Ser Glu Gln Ile Phe Thr Arg Thr		
1170	1175	1180
Lys Glu Asp Val Pro Gly Pro Pro Ala Gly Val Lys Ala Ala Ala Ala		
1185	1190	1195
Ser Ala Ser Met Val Phe Val Ser Trp Leu Pro Pro Leu Lys Leu Asn		
1205	1210	1215
Gly Ile Ile Arg Lys Tyr Thr Val Phe Cys Ser His Pro Tyr Pro Thr		
1220	1225	1230
Val Ile Ser Glu Phe Glu Ala Ser Pro Asp Ser Phe Ser Tyr Arg Ile		

1235	1240	1245
Pro Asn Leu Ser Arg Asn Arg Gln Tyr Ser Val Trp Val Val Ala Val		
1250		1260
Thr Ser Ala Gly Arg Gly Asn Ser Ser Glu Ile Ile Thr Val Glu Pro		
265	1270	1275
Leu Ala Lys Ala Pro Ala Arg Ile Leu Thr Phe Ser Gly Thr Val Thr		
1285	1290	1295
Thr Pro Trp Met Lys Asp Ile Val Leu Pro Cys Lys Ala Val Gly Asp		
1300	1305	1310
Pro Ser Pro Ala Val Lys Trp Met Lys Asp Ser Asn Gly Thr Pro Ser		
1315	1320	1325
Leu Val Thr Ile Asp Gly Arg Arg Ser Ile Phe Ser Asn Gly Ser Phe		
1330	1335	1340
Ile Ile Arg Thr Val Lys Ala Glu Asp Ser Gly Tyr Tyr Ser Cys Ile		
345	1350	1355
Ala Asn Asn Asn Trp Gly Ser Asp Glu Ile Ile Leu Asn Leu Gln Val		
1365	1370	1375
Gln Val Pro Pro Asp Gln Pro Arg Leu Thr Val Ser Lys Thr Thr Ser		
1380	1385	1390
Ser Ser Ile Thr Leu Ser Trp Leu Pro Gly Asp Asn Gly Gly Ser Ser		
1395	1400	1405
Ile Arg Gly Tyr Ile Leu Gln Tyr Ser Glu Asp Asn Ser Glu Gln Trp		
1410	1415	1420
Gly Ser Phe Pro Ile Ser Pro Ser Glu Arg Ser Tyr Arg Leu Glu Asn		
425	1430	1435
Leu Lys Cys Gly Thr Trp Tyr Lys Phe Thr Leu Thr Ala Gln Asn Gly		
1445	1450	1455
Val Gly Pro Gly Arg Ile Ser Glu Ile Ile Glu Ala Lys Thr Leu Gly		
1460	1465	1470
Lys Glu Pro Gln Phe Ser Lys Glu Gln Glu Leu Phe Ala Ser Ile Asn		
1475	1480	1485
Thr Thr Arg Val Arg Leu Asn Leu Ile Gly Trp Asn Asp Gly Gly Cys		

1490

1495

1500

Pro Ile Thr Ser Phe Thr Leu Glu Tyr Arg Pro Phe Gly Thr Thr Val  
505 1510 1515 1520

Trp Thr Thr Ala Gln Arg Thr Ser Leu Ser Lys Ser Tyr Ile Leu Tyr  
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*a*  
Asp Leu Gln Glu Ala Thr Trp Tyr Glu Leu Gln Met Arg Val Cys Asn  
1540 1545 1550

Ser Ala Gly Cys Ala Glu Lys Gln Ala Lys Glu Ala Ala Arg Cys Lys  
1555 1560 1565

Glu Phe Ser  
1570